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Missing the obvious: psychosocial obstacles in Veterans with hepatocellular carcinoma

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Abstract

Background: Socioeconomic disparities in patients with hepatocellular carcinoma (HCC) influence medical treatment. In addition to socioeconomic barriers, the Veteran population suffers from significant psychosocial obstacles. This study identifies the social challenges that Veterans face while undergoing treatment for HCC.

Methods: One hundred Veterans at the Palo Alto VA treated for HCC from 2009 to 2014 (50 consecutive patients who underwent a surgical procedure; 50 treated with intra-arterial therapy) were retrospectively reviewed.

Results: Substance abuse history was identified in 96%, and half were unemployed. Most patients survived on a limited income [median $1340, interquartile range (IQR) 900–2125]; 36% on ≤ $1000/month, 37% between $1001–2000/month and 27% with >$2000/month. A history of homelessness was found in 30%, more common in those of the lowest income (57% of ≤$1K/month group, 23% of $1–2K/month group and 9% of >$2K/month group, $P < 0.01$). Psychiatric illness was present in 64/100 patients; among these the majority received ongoing psychiatric treatment. Transportation was provided to 23% of patients who would otherwise have been unable to attend medical appointments.

Conclusions: Psychiatric disease and substance abuse are highly prevalent among Veterans with HCC. Most patients survive on a very meager income. These profound socioeconomic and psychosocial problems must be recognized when providing care for HCC to this population to provide adequate treatment and surveillance.

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Introduction

The incidence of hepatocellular carcinoma (HCC) has doubled over the last few decades primarily owing to the hepatitis C virus (HCV) infection.[1–6] An estimated 1.6% (4.1 million people) of the US population have been exposed to HCV. The rate of Veterans exposed to HCV is even higher at about three times that of the general population with a range from 5.4% to 51% in certain subgroups.[5,7–11] In the past decade, data from the VA HCV Clinical Case Registry have demonstrated that the prevalence of cirrhosis and hepatic decompensation has doubled, and the prevalence of HCC has increased by 19-fold in the Veteran population.[12]

In addition to this increased medical risk, Veterans have profound psychosocial and socioeconomic barriers to health care. Factors such as homelessness, low income, substance abuse, psychiatric disorders and low socioeconomic status are all highly prevalent in this population and have been shown to affect negatively cancer care.[2,13–24] These barriers seem to be out of proportion and not well acknowledged in the Veteran population.[7,8,25]

As cancer treatment continues to evolve, clinicians taking care of Veterans not only need to consider the disease process but should also be aware of the psychological and socioeconomic issues these patients face. With respect to HCC, these

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issues are commonly evaluated when considering transplantation[26]; however, they are less often investigated when a patient is being assessed for surgical resection and intra-arterial therapies. The purpose of this study was to identify and quantify psychosocial and economic challenges in a Veteran cohort being treated for HCC.

Patients and methods

After obtaining Internal Review Board (IRB) approval, 100 HCC patients treated from 2009 to 2014 were retrospectively reviewed. Fifty consecutive patients who underwent a surgical procedure – resection or laparoscopic radiofrequency ablation (RFA) – and 50 consecutive patients who were primarily treated with intra-arterial therapy (transarterial chemoembolization or bland embolization) were selected. The diagnosis of HCC was made via identification of classic imaging characteristics on computed tomography (CT) and/or magnetic resonance imaging (MRI) (hypervascular arterial phase with washout on delayed phase and presence of pseudocapsule). If the patient underwent a resection, confirmation of HCC was made after specimen removal by pathology.

Patient information was obtained by chart review of the VA electronic medical record – Computerized Patient Record System (CPRS), VistaWeb/Vista R01. Data on patient demographics, comorbidities, substance use, criminal history, income level, psychiatric diagnosis, current employment and place of residence were collected from progress notes by social work, psychiatry, case management and surgery. Detailed information regarding criminal history was typically only available when a comprehensive history was being obtained for patients undergoing either (i) evaluation of treatment programmes for psychiatric disorders, or (ii) a complete needs assessment by a social work.

Standard descriptive statistics was performed for categorical and continuous variables. Discrete categorical variables were compared using Fisher's exact test. Continuous variables were expressed as median with interquartile range (IQR) or mean with standard deviation and means were compared using Student's *t*-test. All tests were two-tailed, and statistical significance was set at a P-value < 0.05. Kaplan–Meier estimations were used to analyse overall survival. Statistical analyses were performed using STATA version 13.1 (StataCorp, College Station, TX, USA).

Results

Demographics

The median age of the cohort was 63 years (IQR 60–67). Eighty-nine per cent of patients had cirrhosis with 79% of patients testing positive for HCV. Of the comorbidities reviewed, 66% had hypertension, 65% were obese [average body mass index (BMI) 28.6 ± 5.2], 33% had hyperlipidaemia, 28% osteoarthritis, 24% were diabetic, 17% had chronic obstructive pulmonary disease (COPD) and 14% had coronary artery disease.

Psychosocial history

Ninety-six per cent of patients had a history of substance abuse with 89% having a history of alcohol abuse and 79% having a history of drug use not including alcohol (marijuana, methamphetamines, cocaine, LSD, heroin or opioids). At initial presentation, 24% were currently drinking alcohol and 21% were actively using drugs. Twenty-eight per cent of patients sought addiction treatment services through the VA. Smoking history was present in 84% of patients with 41% actively smoking. Social history characteristics are demonstrated in Table 1. Sixty-four per cent of patients had a documented psychiatric disorder. Of this group, 92% (59/64) were actively receiving treatment through the VA. Depression and post-traumatic stress disorder (PTSD) were the top two diagnoses, 56% (36/64) and 34% (22/64), respectively.

Criminal History

Fifty-one per cent of patients had a documented criminal history. The majority of cases were for driving under the influence (DUI) followed by assault and battery, drunkenness in public, theft, possession of or under the influence of illegal substances and a sexual offense.

Income

Financial information was available for 84 out of the 100 patients. The median monthly income was $1340 (IQR $900–$2125). Income was stratified into three subgroups indexed to the Federal Poverty Level ($973/month, $11 770/year). Thirty-six per cent fell at or below the Federal Poverty Level of ≤$1000/month, 37% between $1001 and 2000/month and 27% had income >$2000/month (Table 2). Forty-eight per cent of patients are supported through funds coming from the VA. Thirty per cent of patients receive a VA pension (a fund for patients with low or no income source); the maximum amount for this pension is $12 000/year. Eighteen percent of patients are on VA disability or a retirement fund. Seventy per cent of

Table 1 Social history characteristics of the total cohort

Variable	All patients n = 100 (%)
History of any substance abuse	96
History of alcohol abuse	89
Current alcohol abuse	24
History of drug use	79
Current drug use	21
History of smoking	85
Current smoking	41
Criminal history	51

patients were receiving financial support from the state - either social security disability insurance or supplemental security income.

Employment history revealed that 54% of patients were unemployed, 34% were retired, and only 12% were working. Of the 12% of patients that were employed, six were working full-time, five were working part-time, and it was unknown whether the last patient was working full- or part-time. Twenty-three per cent of patients required assistance with travel. This included patients receiving reimbursement for mileage, shuttle reservations, cab rides or air travel.

Homelessness

Housing information was available for 90 out of 100 patients (Table 3). Only 23% of patients owned a home, and 26% were currently renters. A history of homelessness was present in 30% of patients, which was more common in those with the lowest income group: 57% (17/30) of ≤$1K/month group, 23% (7/31) of $1–2K/month group and 9% (2/23) of >$2K/month group ($P < 0.01$). A separate group of patients, comprising 22% (19/90) of the cohort, were documented as living with a family member, friend or in a trailer. Housing assistance through the VA was provided to 15% (13/90) of patients.

Survival

The median survival for the 42 patients that underwent a resection was 46.1 months and for the 50 patients that underwent transcatheter arterial chemoembolization (TACE) was 17.3 months. There were only eight patients that underwent a laparoscopic RFA. For those patients that underwent a resection, 1-, 3- and 5-year survival rates are 80.3%, 62.4%, and 24.1%, respectively. The follow-up period for those patients who underwent TACE or laparoscopic RFA was only extended to 3 years. The 1- and 3-year survival rates for TACE were 56.7% and 31.4% and for RFA were 75% and 60% (Fig. 1).

Table 2 Income stratified indexed to the Federal Poverty Level

Financial Level	*n* = 84[a]
Income per month, median (IQR)	$1340 ($900–2125)
<$1000/month, *n* (%)	30 (36)
$1001–2000/month, *n* (%)	31 (37)
>$2000/month, *n* (%)	23 (27)

[a]Financial information available for 84 out of 100 patients.

Table 3 Housing characteristics

Housing	*n* = 90[a]
Own, *n* (%)	21 (23)
Rent, *n* (%)	23 (26)
Homeless, *n* (%)	27 (30)
Other (trailer, truck, etc.), *n* (%)	19 (21)

[a]Housing information available for 90 out of 100 patients.

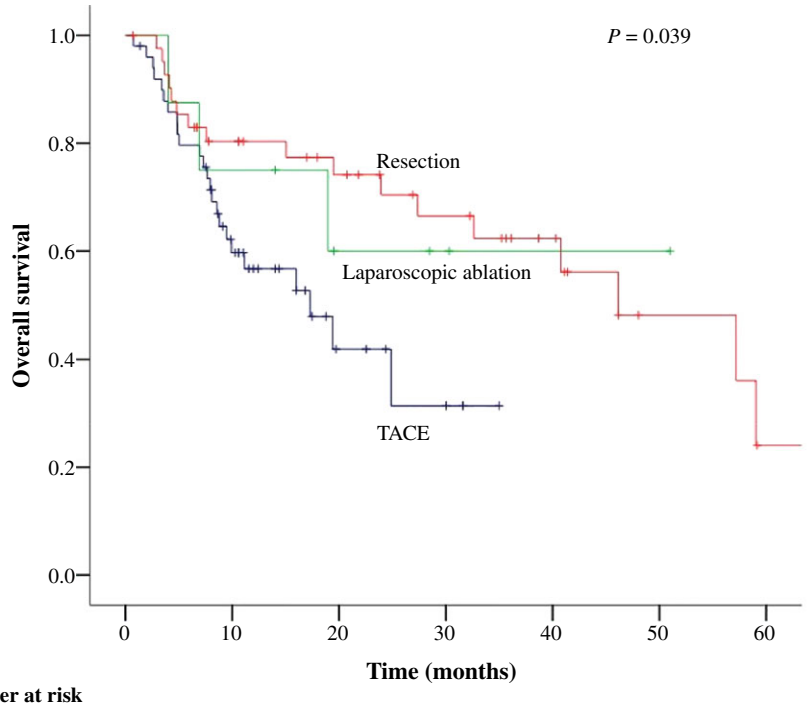
Discussion

The present findings demonstrate many psychosocial and socioeconomic factors in Veterans treated for HCC. These factors have all been identified to be barriers to successful medical care delivery and, therefore, need to be identified and addressed.[2,13–24] Although patients in the general population with HCC face similar barriers, these obstacles are much more prevalent in the Veteran population. Few studies have quantified these variables to the degree of this data set. Comparison of the general population to Veterans with HCC demonstrates a higher prevalence of psychiatric disorders (19.6–50% versus 64%), smoking (13.6% versus 41%) and alcohol use (14.5% versus 24%) in the Veterans ([24,27–30]). Veterans are also likely to survive on an average lower income; however, a direct comparison is difficult to make with the general population given the lack of reported financial income in these patients. Many studies have consistently found that patients of lower socioeconomic status have poorer survival outcomes after HCC treatment.[14,17,18,21,26]

One-third of the cohort had a history of homelessness. Homelessness is a prevalent issue in the Veteran population.[24] Housing is a critical determinant of health, and there are a significant number of Veterans who are homeless in the community. Multiple studies have found that homeless patients have higher mortality rates,[20,31–33] and in homeless Veterans, mortality is three times higher when compared with Veterans who are housed.[16] Those patients with unstable housing situations have worse health conditions, psychiatric issues and more chronic illnesses.[16] Higher rates of substance abuse and emergency care are also noted in homeless patients.[34]

The Veteran HCC patients also suffer from high rates of smoking, substance abuse, and psychiatric illness. About 84% of our study group had a history of smoking, and 41% of patients were smoking at the time of surgical or procedural treatment. Smoking not only impairs wound healing,[35,36] it has also been shown to contribute to poor compliance and non-adherence to medical therapies.[37] Psychiatric disorders have also been shown to decrease adherence to medical therapies by three-fold.[38,39] In some studies, 89–93% of HCV-positive patients had psychiatric and/or substance use disorders documented in their medical records.[7,25] In our study, we found 96% of patients had a history of substance abuse and 64% of patients had a documented psychiatric illness. Patients with mental illness tend to have higher rates of mortality when lost to follow-up care.[13,40] However, outreach programmes by the VA to re-engage these patients have been successful in reducing mortality when treatment is resumed.[41]

Transportation is also an overlooked, yet important aspect of healthcare, which can often be a barrier to receiving



Number at risk							
TACE	50	31	27	26	26	26	26
Lap ablation	8	6	5	5	5	5	5
Resection	42	36	32	30	29	27	25

Figure 1 Overall survival of Veterans treated for hepatocellular carcinoma (HCC) by resection, laparoscopic radiofrequency ablation and transcatheter arterial chemoembolization (TACE)

treatment.[27,42,43] In this study, 23% of patients received travel assistance. In a recent review, 10–51% of patients reported transportation as a barrier to health care access, most often owing to not owning or lack of access to a car.[27,42,43] Patients with a lower socioeconomic status also had higher rates of transportation barriers to ongoing health care compared with patients in the higher socioeconomic status group. The number of patients receiving travel assistance through the VA in this population of patients is quite low, suggesting that VA-implemented travel assistance helps to minimize transportation as a barrier. The VA is uniquely equipped to dedicate non-income based resources to facilitate access for Veteran patients to get their medical care. There is often lodging available for family members to stay on campus while loved ones are receiving treatment. Case managers can arrange for shuttles, vanpools and occasionally cab rides. For patients who have their own vehicles but travel long distances, there is a mileage reimbursement programme. Homeless patients discharged from the hospital have arrangements made by case managers or social workers for appropriate shelter during the post-operative recovery periods. Those meeting criteria are enrolled in the Housing and Urban Development - Veterans Affairs Supportive Housing program that assists Veterans in finding permanent housing.

A limitation of this report is that it is a single centre retrospective study, only catching the population of Veterans with HCC being treated at the Palo Alto VA. We cannot capture those patients who have not come to treatment owing to barriers to care, loss of follow-up, or failure of HCC screening. Another limitation of this Veterans HCC patient population is that we did not explicitly include those patients that were evaluated for transplantation through the gastroenterology clinic (who were likely to have fewer troubles than the cohort described here). All patients are discussed at a multidisciplinary tumour board; the decision regarding treatment modality (primary resection or referral for transplantation) is made jointly. However, that decision does itself reflect psychosocial comorbidities – patients with clear psychosocial contraindications to transplantation are triaged to resection. Therefore, the patients that underwent surgery are likely to have more psychosocial problems than those considered for transplantation (although many of these patients would have been captured because of the use of arterial therapy as a bridge toward transplantation). In future investigations, we plan to investigate how many patients among all Veterans with HCC have disease within transplantation criteria but are excluded only because of psychosocial comorbidities. Finally, in the present study, there

is no direct comparison group of non-veteran HCC patients to assess differences in socioeconomic and psychosocial hardships.

Although this study specifically examined barriers such as homelessness, income, substance abuse and psychiatric illness in a Veteran population with HCC, these same factors influence medical care in all disciplines, lending their importance to general health practice. There is an abundance of literature on how socioeconomic status affects medical care and treatment, hospital readmissions and length of stay in patients with cardiovascular disease, diabetes and other types of cancer.[44–48] The Veteran population represents a socioeconomically deprived group of patients; however, patients with similar obstacles exist in all health care systems. Within hepatobiliary practice, this study also adds understanding to the psychosocial problems of HCC patients associated with HCV and IV drug injection populations that similarly exist elsewhere. It is necessary to identify and address these issues to successfully deliver medical care and maintain appropriate compliance with treatment.

In conclusion, the majority of Veterans treated for HCC have substantial socioeconomic and psychosocial issues, as well as extreme economic hardship with many of them surviving on very meager income. It is a true testament to the success of the VA system in providing access and support that this cohort received treatment for their HCC given their profound psychosocial troubles. These issues must be recognized and proactively addressed when providing care to this patient population. Veteran patients require substantial non-medical resources to complete treatment and continue adequate HCC surveillance. Early involvement of social work and other support resources can help facilitate optimal treatment for these patients.

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Conflicts of interest

None declared.

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